

T 8075 EN

Series 590 · Type 3591 Globe Valve

ANSI version



Application

Maintenance-friendly cage valve for process engineering applications with high industrial requirements

Valve size	NPS 10 to 32
Pressure rating	Class 150 to 900
Temperatures	-46 to +500 °C · -50 to +932 °F

Type 3591 Globe Valve operated with

- Type 3271 Pneumatic Actuator (Type 3591-1 Control Valve)
- Hydraulic piston actuator
- Pneumatic piston actuator

Special features

- Flanged seat or clamped-in seat for quick service
- Balanced to handle high differential pressures
- Anti-rotation fixture at the piston stem

Valve body made of

- Cast steel
- Cast stainless steel
- High-temperature cast steel
- Cold-resisting cast steel

Low-noise valve piston

- Metal seal
- High-performance metal seal (on request)

The control valves with their modular design can be equipped with various accessories:

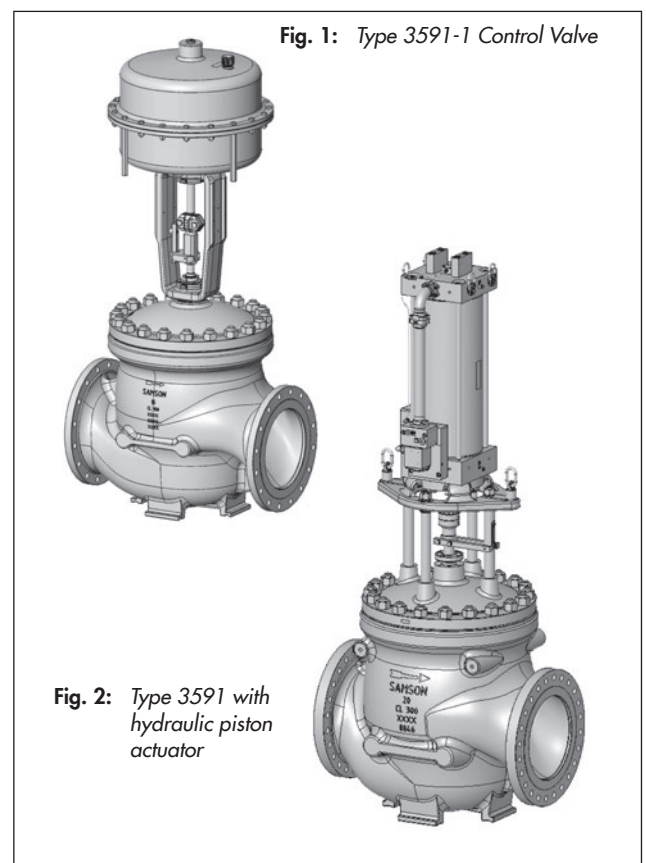
Positioners, limit switches, solenoid valves and other accessories according to IEC 60534-6-1 ¹⁾ and NAMUR recommendation (see Information Sheet ▶ T 8350 for more details).

Versions

Standard version · Globe valve for temperatures from -10 to +220 °C (14 to 428 °F) · NPS 10 to 28 (Class 150 to 900) and NPS 32 (Class 150)

- **Type 3591-1** (Fig. 1) · Type 3591 Valve and Type 3271 Pneumatic Actuator (see Data Sheets ▶ T 8310-2 and ▶ T 8310-3)
- Type 3591 Valve and hydraulic piston actuator (Fig. 2)
- Type 3591 Valve and pneumatic piston actuator

¹⁾ Accessories required. See associated actuator documentation.



Further versions

- **Welding ends or welding-neck ends**
- **Multi-hole cage** and **Combi Cage** for noise reduction
- **Insulating section or bellows seal** · Details on request
- **Type 3273 Side-mounted Handwheel** · See Data Sheet
▶ T 8312
- **Other materials** · On request
- **Version in NPS 32, Class 300 to 900** · On request

Other versions (on request)

- Type 3591-3 Valve with Hand-operated Actuator
- Control valve with Type 3591-4 Electric Actuator

Principle of operation

The Type 3591 Valve uses a piston (5), which moves within a cage (124), as the closure member. The piston is pressure-balanced as standard. The piston stem (36) connected to the actuator stem by a stem connector. The piston stem is sealed by either a PTFE or graphite packing (15), which is either self adjusting or can be adjusted manually.

The medium flows through the valve as indicated by the arrow on the body. A change in the signal acting on the actuator causes the piston to move. The piston position and cage shape determine the released cross-section and the flow rate with it.

Versions

The seat (4) of the Type 3591 version with flanged seat is bolted into the seat bridge. The cage (124) is suspended in the valve body (1) (see Fig. 3).

Actuator connection and anti-rotation fixture

The actuator is connected using a special assembly (60), which varies depending on the mounted actuator. These assemblies are fitted with an external anti-rotation fixture for the piston stem.

Lifting eyelets

The valves in valve sizes NPS 16 (Class 300 to 900) and NPS 20 (Class 150 to 900) to 32 (Class 150) can be equipped with additional lifting eyelets (148) to facilitate lifting and transporting.

Fail-safe action

Depending on how the compression springs are arranged in the pneumatic actuator, the valve has two fail-safe positions that become effective when the supply air fails:

- **Actuator stem extends (fail-close):** The valve closes when the supply air fails.
- **Actuator stem retracts (fail-open):** The valve opens when the supply air fails.

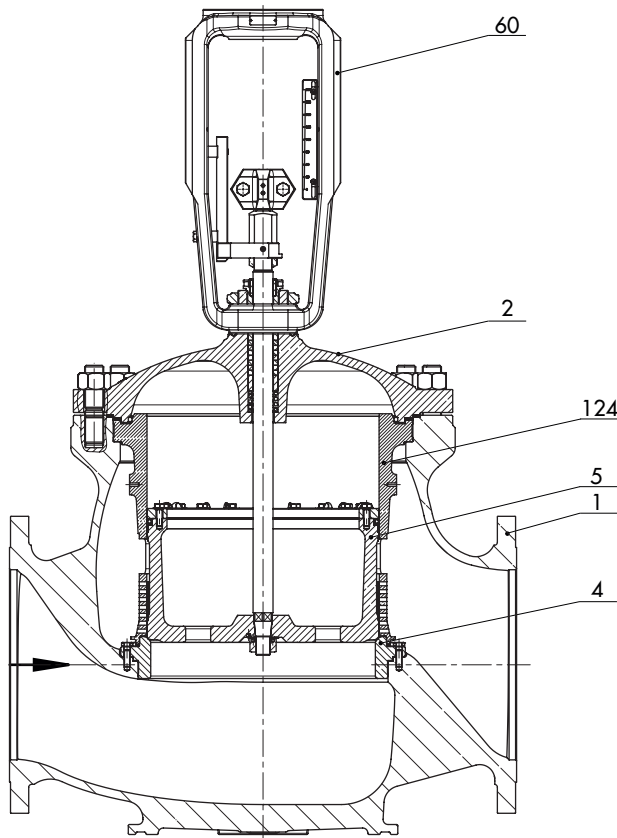


Fig. 3: Type 3591 with flanged seat · NPS 10 to 12 (all pressure ratings) and NPS 16 (Class 150)

- 1 Valve body
- 2 Bonnet
- 4 Seat
- 5 Piston
- 14 Body nut
- 15 Packing
- 17 Body gasket
- 36 Piston stem
- 60 Yoke assembly with anti-rotation fixture
- 124 Cage
- 126 Gasket between cage and bonnet
- 148 Lifting eyelet (available for NPS 16 and larger, Class 300)
- 160 Screw

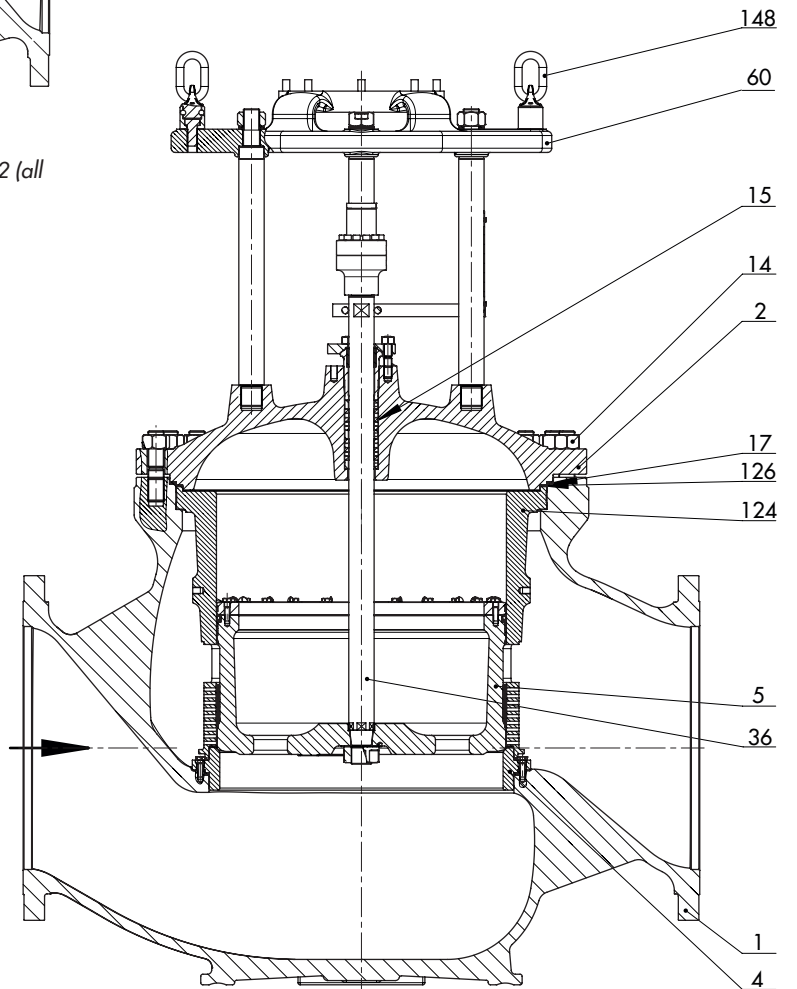



Fig. 4: Type 3591 with flanged seat · NPS 16 to 28 (Class 300 to 900)

Table 1: Technical data · Type 3591

Material		Cast steel			Cast stainless steel
		A352 LCC	A216 WCC	A217 WC6	A351 CF8M
Valve size	NPS	10 to 32	10 to 32	10 to 32	10 to 32
Pressure rating		Class 150 to 900			
Type of connection	Flange	All ANSI versions			
	Welding end	According to ASME B16.25			
Seat-piston seal		Metal seal or high-performance metal seal			
Characteristic		Equal percentage (eq. %) · Linear (lin) · Modified linear (mod. lin) ¹⁾			
Temperature ranges in °C (°F) · Permissible operating pressures acc. to pressure-temperature diagram (see Information Sheet ► T 8000-2)					
Body without insulating section		-10 to +220 (14 to 428) ³⁾	-10 to +220 (14 to 428) ³⁾	-10 to +220 (14 to 428) ³⁾	-10 to +220 (14 to 428) ³⁾
Body with	Insulating section	-46 to +345 (-50 to +653)	-29 to +425 (-20 to +797)	-29 to +500 (-20 to +932)	-46 to +500 (-50 to +932)
Valve piston, balanced	PTFE	-46 to +220 (-50 to +428)			
	Graphite	-46 to +500 (-50 to +932)			
Leakage class according to ANSI/FCI 70-2 (1991)					
Valve piston, balanced		Standard: IV (with PTFE or graphite ring) ²⁾			
Conformity					
					

¹⁾ Equivalent to quick opening

²⁾ High-performance metal seal: leakage class V (only with PTFE ring) on request

³⁾ Up to +350 (662) with high-temperature packing

Table 2: Materials

Standard version Body and flanges ¹⁾		Cast steel			Cast stainless steel
		A352 LCC	A216 WCC	A217 WC6	A351 CF8M
Seat and piston ²⁾	Metal seal	410-2/1.4006 · CA6NM-B/1.4317			316L/1.4404 · CF8M/1.4408
Seat ring	Pressure balancing	PTFE with carbon · Graphite			
Packing ³⁾		≤NPS 16, Class 150: packing PTFE with carbon, spring 1.4310 or adjustable high-temperature packing ≥NPS 16, Class 300: packing PTFE with carbon, adjustable or adjustable high-temperature packing			
Body gasket		Graphite seal on metal core			

¹⁾ Pressure-temperature diagrams and additional materials can be found in the Information Sheet ► T 8000-2.

²⁾ Stellite® facing on request

³⁾ Other packings on request (► T 8000-1)

Table 3: Overview of available K_{VS}/C_{Vmax} coefficients

SB: seat bore · KØ: piston stem diameter · mod. lin: modified linear · lin: linear · eq. %: equal percentage

Table 3.1: Version with flanged seat

NPS	Class	Seat bore in mm	KØ in mm	C_{Vmin} lin/eq. %	Charac-teristic	Travel in mm													
						60		90	120		150	200	250	300	350	400			
						K_{VS}/C_{Vmax}													
10	150 to 600	280	40	14	mod. lin	1040/1200		1100/-1270	1120/1300		-	-	-	-	-	-			
					lin	325/375	655/755	980/1130	1080/1250		-	-	-	-	-	-			
					eq. %	300/350	655/755	860/1000	1040/1200		-	-	-	-	-	-			
	900				mod. lin	1150/1350		1200/1400	1250/1450		-	-	-	-	-	-			
					lin	325/375	655/755	1080/1250	1200/1400		-	-	-	-	-	-			
					eq. %	300/350	655/755	900/1040	1100/1270		-	-	-	-	-	-			
12	150 to 600	340	40	20	mod. lin	1340/1550		-	1470/1700		1500/1730	-	-	-	-	-			
					lin	425/490	830/960		1340/1550		1400/1600	-	-	-	-	-			
					eq. %	345/400	830/960		1200/1400		1340/1550	-	-	-	-	-			
	900				mod. lin	1500/1730		-	1750/2020		1800/2080	-	-	-	-	-			
					lin	425/490	830/960		1500/1730		1650/1900	-	-	-	-	-			
					eq. %	345/400	830/960		1340/1550		1600/1850	-	-	-	-	-			
16	150 to 600	450	60 ¹⁾	42	mod. lin	2150/2500		-	2700/3150		-	2850/3300	-	-	-	-			
					lin	640/740	1300/1500		2500/2900		-	2800/3250	-	-	-	-			
					eq. %	605/700	1300/1500		2300/2650		-	2700/3150	-	-	-	-			
20	150 to 600				560	60	66	mod. lin	-	-	-	4000/4650		-	4400/5100	4500/5200	-	-	-
								lin	-	-		1300/1500	2600/3000	-	4050/4700	4300/5000	-	-	-
								eq. %	-	-		1080/1250	2600/3000	-	3750/4350	4150/4800	-	-	-
24	150 to 600	670	80 ²⁾	96				mod. lin	-	-	-	5700/6600		-	6550/7550	6700/7750	-	-	-
								lin	-	-		1700/2000	3450/4000	-	5900/6850	6450/7450	-	-	-
								eq. %	-	-		1470/1700	3450/4000	-	5200/6000	6000/6900	-	-	-
28	150 to 600				780	80	132	mod. lin	-	-	-	7200/8300		-	-	8800/10200	-	9200/10600	
								lin	-	-		2150/2500	4300/5000	-	8400/9700	-	8900/10300		
								eq. %	-	-		1850/2100	4300/5000	-	7900/9100	-	8600/10000		
32	150	890	80	On request				mod. lin	-	-	-	-	-	-	10500/12000	-	11600/13400	12000/13900	
								lin	-	-		-	-	-	6700/7750	-	10500/12000	11400/13200	
								eq. %	-	-		-	-	-	4000/4650	-	9200/10600	10800/12500	

1) With Class 150: KØ 40 mm

2) With Class 150: KØ 60 mm

Table 3.2: Version with noise-reducing measures with multi-hole cage I

NPS	Class	Seat bore in mm	KØ in mm	C _{Vmin} lin/eq. %	Charac-teristic	Travel in mm													
						60		90	120		150	200	250	300	350	400			
						K _{V5} /C _{Vmax}													
10	150 to 600	280	40	14	mod. lin	800/925		950/1100	1040/1200		-	-	-	-	-	-			
					lin	300/350	625/725	900/1040	1000/1150										
					eq. %	300/350	625/725	700/810	900/1040										
	900				mod. lin	800/925		1000/1150	1100/1270		-	-	-	-	-	-	-		
					lin	300/350	625/725	950/1100	1080/1250										
					eq. %	300/350	625/725	700/810	950/1100										
12	150 to 600	340	40	20	mod. lin	950/1100		-	1300/1500		1400/1600	-	-	-	-	-			
					lin	370/430	725/840		1250/1450		1340/1550								
					eq. %	370/430	725/840		1150/1350		1300/1500								
	900				mod. lin	950/1100		-	1470/1700		1600/1850	-	-	-	-	-	-		
					lin	370/430	725/840		1340/1550		1550/1800								
					eq. %	370/430	725/840		1200/1400		1470/1700								
16	150 to 600	450	60 ¹⁾	42	mod. lin	1400/1600		-	2250/2600		-	2680/3100	-	-	-	-			
					lin	555/640	1150/1350		2200/2550			2650/3050							
					eq. %	475/550	1150/1350		1850/2100			2500/2900							
20	150 to 600				560	60	66	mod. lin	-	-	-	3150/3650		-	3900/4500	4200/4850	-	-	-
								lin	-	-		1200/1400	2400/2800		3650/4250	4000/4650			
								eq. %	-	-		1200/1400	2400/2800		3150/3650	3750/4350			
24	150 to 600	670	80 ²⁾	96				mod. lin	-	-	-	4000/4650		-	5500/6350	5900/6850	-	-	-
								lin	-	-		1400/1600	3250/3750		5100/5900	5700/6600			
								eq. %	-	-		1400/1600	3250/3750		4150/4800	5100/5900			
28	150 to 600				780	80	132	mod. lin	-	-	-	5000/5800		-	7700/8900	-	8400/9700	-	
								lin	-	-		1850/2100	3900/4500		7300/8400		8200/9500		
								eq. %	-	-		1700/2000	3900/4500		6400/7400		7900/9100		
32	150	890	80	On request				mod. lin	-	-	-	-	-	-	8700/10050	-	10000/11500	-	10700/12300
								lin	-	-					6700/7750		9300/10700		10500/12000
								eq. %	-	-					3100/3600		7300/8400		9500/11000

1) With Class 150: KØ 40 mm

2) With Class 150: KØ 60 mm

Table 3.3: Version with noise-reducing measures with Combi Cage I (flanged seat)

NPS	Class	Seat bore in mm	KØ in mm	C _{Vmin} lin/eq. %	Charac-teristic	Travel in mm											
						60	90	120	150	200	250	300	350	400			
						K _{VS} /C _{Vmax}											
10	150 to 600	280	40	14	mod. lin		1000/1150	1080/1250									
					lin	-	-	-	-	-	-	-	-	-			
					eq. %												
	900				mod. lin		1040/1200	1150/1350									
					lin	-	-	-	-	-	-	-	-	-			
					eq. %												
12	150 to 600	340	40	20	mod. lin			1340/1550	1400/1600								
					lin	-	-	-	-	-	-	-	-				
					eq. %												
	900				mod. lin			1550/1800	1650/1900								
					lin	-	-	-	-	-	-	-	-	-			
					eq. %												
16	150 to 600	450	60 ¹⁾	42	mod. lin			2300/2650		2750/3200							
					lin	-	-	-	-	-	-	-	-				
					eq. %												
20	150 to 600				560	60	66	mod. lin					4000/4650	4300/5000			
								lin	-	-	-	-	-	-	-	-	
								eq. %									
24	150 to 600	670	80 ²⁾	96				mod. lin					5700/6600	6300/7300			
								lin	-	-	-	-	-	-	-	-	
								eq. %									
28	150 to 600				780	80	132	mod. lin						7900/9100		8800/10200	
								lin	-	-	-	-	-	-	-	-	
								eq. %									
32	150	890	80	On request				mod. lin							10500/12000		11000/12700
								lin	-	-	-	-	-	-	-	-	
								eq. %									

¹⁾ With Class 150: KØ 40 mm

²⁾ With Class 150: KØ 60 mm

Table 4: Dimensions for Type 3591-1 Control Valve · Dimensions in mm and inches

Table 4.1: Type 3591 Valve · NPS 10 to 12 and NPS 16 (Class 150)

Valve	NPS	10	12	16	
H2	Class 150	mm	241	281	341
		in	9.49	11.06	13.43
	Class 300	mm	241	281	-
		in	9.49	11.06	
	Class 600	mm	271	301	-
		in	10.67	11.85	
	Class 900	mm	291	331	-
		in	11.46	13.03	
H5	Class 150	mm	203	243	298
		in	7.99	9.57	11.73
	Class 300	mm	223	260	-
		in	8.78	10.24	
	Class 600	mm	255	280	-
		in	10.04	11.02	
	Class 900	mm	273	305	-
		in	10.75	12.01	
H4	Class 150	mm	485	492	665
		in	19.09	19.37	26.18
	Class 300	mm	485	492	-
		in	19.09	19.37	
	Class 600	mm	485	492	-
		in	19.09	19.37	
	Class 900	mm	485	479	-
		in	19.09	18.86	
H8 for actuator	1000 to 1400-60 cm ²	mm	419	419	-
		in	16.50	16.50	
	1400-120 to 2800 cm ² , travel: 30 to 75 (FA)/30 to 38 (FE)	mm	504	504	-
		in	19.84	19.84	
	1400-120 to 2800 cm ² , travel: 90 to 120 (FA)/60 to 120 (FE)	mm	651	651	651
		in	25.63	25.63	25.63
H9 for actuator	1000 to 1400-60 cm ²	mm	128	128	-
		in	5.04	5.04	
	1400-120 to 2800 cm ² , travel: 30 to 75 (FA)/30 to 38 (FE)	mm	195	195	-
		in	7.68	7.68	
	1400-120 to 2800 cm ² , travel: 90 to 120 (FA)/60 to 120 (FE)	mm	240	240	240
		in	9.45	9.45	9.45
G for actuator (FA/FE)	1000 to 1400-60 cm ²	mm	165/150		-
		in	6.50/5.91		
	1400-120 cm ²	mm	285/315		-
		in	11.22/12.40		
	2800 to 2 x 2800 cm ²	mm	315/315	315/345	
		in	12.40/12.40	12.40/13.58	
H7 for actuator (FA/FE)	1000 to 1400-60 cm ²	mm	215/200		-
		in	8.46/7.87		
	1400-120 cm ²	mm	335/365		-
		in	13.19/14.37		
	2800 to 2 x 2800 cm ²	mm	365/365	365/395	
		in	14.37/14.37	14.37/15.55	

Valve	NPS	10	12	16	
Length L raised face ¹⁾	Class 150	mm	673	737	1016
		in	26.50	29.00	40.00
	Class 300	mm	708	775	-
		in	27.88	30.50	
	Class 600	mm	752	819	-
		in	29.62	32.25	
	Class 900	mm	991	1130	-
		in	39.00	44.50	
Length L ring type joint ¹⁾	Class 150	mm	686	750	1029
		in	27.00	29.50	40.50
	Class 300	mm	724	791	-
		in	28.50	31.12	
	Class 600	mm	755	822	-
		in	29.74	32.37	
	Class 900	mm	994	1133	-
		in	39.12	44.62	
Length L welding ends ²⁾	Class 150	mm	752	819	1108
		in	29.62	32.35	43.62
	Class 300	mm	752	819	-
		in	29.62	32.35	
	Class 600	mm	752	819	-
		in	29.62	32.35	
	Class 900	mm	991	1130	-
		in	39.00	44.50	

¹⁾ Face-to-face dimensions for Class 150 to 600 according to ANSI/ISA 75.08.01 and for Class 900 according to ANSI/ISA 75.08.06

²⁾ Face-to-face dimensions for Class 150 to 900 according to ANSI/ISA 75.08.05

Table 4.2: Type 3591 Valve · NPS 16 (Class 300 and higher) to 32

Valve	NPS	16	20	24	28	32		
H2	Class 150	mm	-	500	560	620	685	
		in		19.69	22.05	24.41	26.97	
	Class 300	mm	340	500	565	640	-	
		in	13.39	19.69	22.24	25.20		
	Class 600	mm	360	515	595	670	-	
		in	14.17	20.28	23.43	26.38		
	Class 900	mm	380	535	615	700	-	
		in	14.96	21.06	24.21	27.56		
H5	Class 150	mm	-	350	407.5	Form A: 462.5 Form B: 417.5	Form A: 530 Form B: 470	
		in		13.78	16.04	Form A: 18.21 Form B: 16.44	Form A: 20.87 Form B: 18.50	
	Class 300	mm	325	387.5	457.5	Form A: 517.5 Form B: 460	-	
		in	12.80	15.26	18.01	Form A: 20.37 Form B: 18.11		
	Class 600	mm	342.5	407.5	470	Form A: 537.5 Form B: 475	-	
		in	13.48	16.04	18.50	Form A: 21.16 Form B: 18.70		
	Class 900	mm	705	427.5	520	Form A: 585 Form B: 552.5	-	
		in	27.76	16.83	20.47	Form A: 23.03 Form B: 21.75		
	H4	Class 150	mm	-	877	857	1117	1215
			in		34.53	33.74	43.98	47.83
Class 300 to 900		mm	724	877	917	1117	-	
		in	28.50	34.53	36.10	43.98		
H8 for actuator	Type 3271, 1400-120 cm ² , 2800 cm ² , 2 x 2800 cm ²	mm	695	695	695 ¹⁾ /785 ²⁾	785	On request	
		in	27.36	27.36	27.36 ¹⁾ /30.91 ²⁾	30.91		
G for Type 3271 Actuator (FA/FE)	1400-120 cm ² , 2800 cm ² , 2 x 2800 cm ² , 60 mm travel	mm	225/255	-	-	-	-	
		in	8.86/10.04					
	1400-120 cm ² , 2800 cm ² , 2 x 2800 cm ² , 120 mm travel,	mm	285/315	285/315	285/315	285/315	On request	
		in	11.22/12.40	11.22/12.40	11.22/12.40	11.22/12.40		
H7 for Type 3271 Actuator (FA/FE)	1400-120 cm ² , 2800 cm ² , 2 x 2800 cm ² , 60 mm travel	mm	275/305	-	-	-	-	
		in	10.83/12.01					
	1400-120 cm ² , 2800 cm ² , 2 x 2800 cm ² , 120 mm travel	mm	335/365	335/365	335/365	335/365	On request	
		in	13.19/14.37	13.19/14.37	13.19/14.37	13.19/14.37		
Length L raised face ³⁾	Class 150	mm	-	1267 ⁵⁾	1600 ⁵⁾	1854 ⁵⁾	2100 ⁵⁾	
		in		49.88 ⁵⁾	62.99 ⁵⁾	72.99 ⁵⁾	82.68 ⁵⁾	
	Class 300	mm	1057	1308 ⁵⁾	1600 ⁵⁾	1854 ⁵⁾	-	
		in	41.62	51.50 ⁵⁾	62.99 ⁵⁾	72.99 ⁵⁾		
	Class 600	mm	1108	1372 ⁵⁾	1676 ⁵⁾	2100 ⁵⁾	-	
		in	43.62	54.02 ⁵⁾	65.98 ⁵⁾	82.68 ⁵⁾		
	Class 900	mm	1422	1600 ⁵⁾	1854 ⁵⁾	2250 ⁵⁾	-	
		in	56.00	62.99 ⁵⁾	72.99 ⁵⁾	88.58 ⁵⁾		

Valve	NPS	16	20	24	28	32	
Length L ring type joint ³⁾	Class 150	mm	-	1280	1613	-	-
		in		50.38	63.49		
	Class 300	mm	1073	1327	1622	1875 ⁶⁾	-
		in	42.24	52.25	63.87	73.87 ⁶⁾	
	Class 600	mm	1111	1378	1686	2111 ⁶⁾	-
		in	43.74	54.27	66.36	83.18 ⁶⁾	
	Class 900	mm	1432	1613	1873	2271 ⁶⁾	-
		in	56.38	63.49	73.74	89.46 ⁶⁾	
Length L welding ends ⁴⁾	Class 150	mm	-	1267 ⁵⁾	1600 ⁵⁾	1854 ⁵⁾	2100 ⁵⁾
		in		49.88 ⁵⁾	62.99 ⁵⁾	72.99 ⁵⁾	82.68 ⁵⁾
	Class 300	mm	1108	1308 ⁵⁾	1600 ⁵⁾	1854 ⁵⁾	-
		in	43.62	51.50 ⁵⁾	62.99 ⁵⁾	72.99 ⁵⁾	
	Class 600	mm	1108	1372 ⁵⁾	1676 ⁵⁾	2100 ⁵⁾	-
		in	43.62	54.02 ⁵⁾	65.98 ⁵⁾	82.68 ⁵⁾	
	Class 900	mm	1422	1600 ⁵⁾	1854 ⁵⁾	2250 ⁵⁾	-
		in	56.00	62.99 ⁵⁾	72.99 ⁵⁾	88.58 ⁵⁾	

1) Class 150

2) Class 300 to 900

3) Face-to-face dimensions for Class 150 to 600 according to ANSI/ISA 75.08.01 and for Class 900 to 2500 according to ANSI/ISA 75.08.06

4) Face-to-face dimensions for Class 150 to 900 according to ANSI/ISA 75.08.05

5) Not standardized, SAMSON face-to-face dimensions

6) Face-to-face dimensions for flanges form A according to ASME B16.47

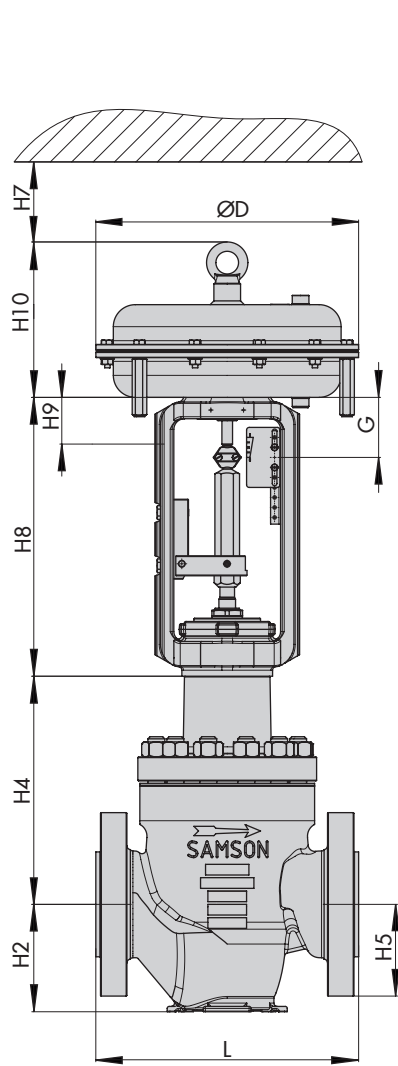
Table 4.3: Type 3271 Pneumatic Actuator

Actuator area	cm ²	1000	1400-60	1400-120	2800	2 x 2800
Diaphragm ØD	in	18.19	20.87	21.02	30.32	30.32
	mm	462	530	534	770	770
H10 ¹⁾	in	15.87	13.27	23.54	28.07	47.76
	mm	403	337	598	713	1213
H7 ²⁾	in	24.02	24.02	25.59	25.59	25.59
	mm	610	610	650	650	650
Thread		M60x1.5		M100x2		
α		G ¾ (¾ NPT)	G ¾ (¾ NPT)	G 1 (1 NPT)	G 1 (1 NPT)	G 1 (1 NPT)

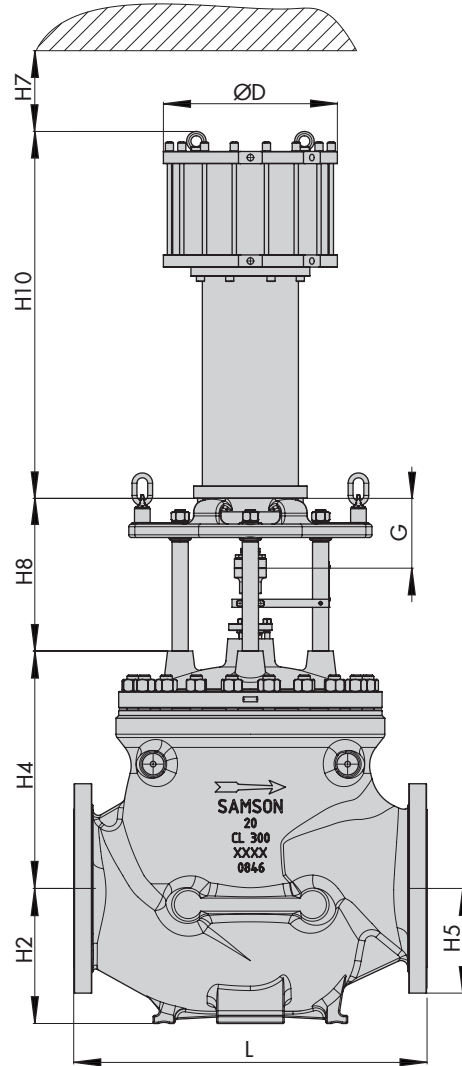
1) Height including lifting eyelet or female thread and eyebolt according to DIN 580. Height of the swivel hoist may differ.

2) Minimum clearance required to remove the actuator

Dimensional drawings



Type 3591 Valve · NPS 10 to 12 and NPS 16 (Class 150)



Type 3591 Valve · NPS 16 (Class 300 and higher) to 32

Table 5: *Weights (approx.) in kg/lbs · Travel in mm*

i Note

The shape and weight of the yoke (60, see H8 in dimension diagrams) vary depending on the intended actuator. The weights specified in Table 5.1 and Table 5.2 are based on the weight of the valve and yoke depending on the actuator area.

Table 5.1: *Type 3591 Valve · NPS 10 to 12 and NPS 16 (Class 150)*

NPS	Actuator	Class 150	Class 300	Class 600	Class 900	
10	1000 to 1400-60 cm ²	kg	450	490	680	1000
		lbs	992	1080	1499	2205
	1400-120 to 2800 cm ² Travel: FA 30 to 75/FE 30 to 38	kg	500	540	720	1040
		lbs	1102	1190	1587	2293
12	1400-120 to 2800 cm ² Travel: FA 90 to 120/FE 60 to 120	kg	500	540	720	1040
		lbs	1102	1190	1587	2293
	1000 to 1400-60 cm ²	kg	610	660	890	1340
		lbs	1345	1455	1962	2954
1400-120 to 2800 cm ² Travel: FA 90 to 120/FE 60 to 120	kg	660	710	940	1390	
	lbs	1455	1565	2072	3064	
16	2800/2 x 2800 cm ² Travel: FA/FE 150	kg	660	710	940	1390
		lbs	1455	1565	2072	3064
	1000 to 1400-60 cm ²	kg	1120	-		
		lbs	2469			
1400-120 to 2800 cm ² Travel: FA 90 to 120/FE 60 to 120	kg	1170				
	lbs	2579				
Piston actuator Travel: FA/FE 200	kg	1170				
	lbs	2579				

Table 5.2: *Type 3591 Valve · NPS 16 (Class 300 and higher) to 32*

NPS		Class 150	Class 300	Class 600	Class 900	
16	kg	-	1800	2430	3250	
	lbs		3968	5357	7165	
20	kg	2470	3000	3960	5820	
	lbs	5445	6614	8730	12831	
24	kg	3180	4420	6050	8580	
	lbs	7011	9744	13338	18916	
28	ASME B16.47 Flange form A	kg	4890	6280	8740	12440
		lbs	10781	13845	19268	27426
	ASME B16.47 Flange form B	kg	4700	6030	8380	12230
		lbs	10362	13294	18475	26963
32	ASME B16.47 Flange form A	kg	6500	-		
		lbs	14330			
	ASME B16.47 Flange form B	kg	6190			
		lbs	13647			

Table 5.3: *Type 3271 Pneumatic Actuator*

Actuator area in cm ²		1000	1400-60	1400-120	2800	2x2800
Weight (without hand-wheel)	kg	80	70	175	450	950
	lbs	176	154	386	992	2094

Selection and sizing of the control valve

1. Calculate the C_V (K_V) coefficient according to IEC 60534.
2. Select the valve size and $C_{V_{max}}$ (K_{VS}) coefficient from Table 3.
3. Selecting the actuator
4. Select the valve body material from Table 1 and Table 2 as well as from the pressure-temperature diagrams (see Information Sheet ► T 8000-2).

Ordering text

Valve size	NPS ...
Pressure rating	Class ...
Body material	Refer to Table 2
Bonnet	Bonnet
Type of connection	Flanges/welding ends
Piston facing	Metal seal or high-performance metal seal (on request)
Characteristic	Equal percentage, linear or modified linear
Type ... Actuator	Type 3271 (► T 8310-2 or ► T 8310-3), pneumatic or hydraulic piston actuators as well as other actuators on request
Fail-safe position	Fail-close or fail-open
Process medium	Density and temperature (other medium data, if required)
Flow rate	Under normal or operating condition for various cases
Pressure	Upstream pressure p_1 and downstream pressure p_2 or differential pressure Δp each with minimum, normal and maximum flow rate
Valve accessories	Positioners, limit switch, solenoid valve etc. (details in Information Sheet ► T 8350)